Lab Report (Supplemental) 实验报告（补充）

The Scientific Method | 科学方法

The **'scientific method'** consists of 6 main steps. First, we start by making an **'observation'** about something in the real-world. This observation then leads us to ask a **'question'** about why this phenomenon happened. We then make inferences to try and explain what happened. This is known as a **'hypothesis'**, which is an educated guess about how or why this phenomenon occurred in the first place. Once we have a **'hypotheses'** formed we will then need to develop a controlled experiment to test our theory, ad during this experiment we will **'collect data'**. Then we **'analyze'** all the **'data'** from the experiment so that we can then formulate a **'conclusion'** that either **'supports'** or **'disproves'** our original **'hypothesis'**. Therefore, **'scientific method'** can be summarized as:

"科学方法" 包括 6 个主要步骤。首先，我们对现实世界中的一些事情进行 "观察"。通过观察结果提出一个 "问题"，为什么会出现这种现象。然后做出推论，试图解释发生了什么，即为 "假设"，这是一种对某种现象最初是如何或为什么发生的有知识的猜测。提出 "假设" 后，需要进行一个控制实验来测试理论，并在实验中 "收集数据"，然后 "分析" 实验中的所有 "数据"，最后得出一个 "结论" 来 "支持" 或 "否定" 最初的 "假设"。因此，"科学方法" 可以概括为：

- Making an **observation**
- Asking a **question**
- Using inferences to form a **hypothesis**
- Setting up a controlled **experiment**
- Recording and analyzing **data and results**
- Drawing a **conclusion**

- 观察
- 问题
- 假设
- 实验
- 数据和结果
- 结论

Types of Variables | 变量类型:

Any well-designed experiment will only have 1 **'variable'** that will change during the experiment. This is known as the **'independent variable'** and all other variables should remain the same throughout the entire experiment.

任何精心设计的实验都只有一个 "变量"，在实验过程中会发生变化，被称为 "独立变量"，所有其他变量在整个实验过程中应保持不变。

- **Independent variable** (what is changed during the experiment)
  自变量（实验过程中发生了什么变化）
- **Dependent variable (**what changes in response to the independent variable)
  因变量（响应自变量的变化）
- **Controlled variable** / Constant (A value that stays the same during the experiment).
  控制变量/常量（实验期间保持不变的值）。

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Developing a Hypothesis | 提出假设

In your **'Mini Jet Pre Lab Report'** you made several **'quantitative'** and **'qualitative observations'** about your **'mini jets'**. You and your group then used these **'observations'** to select the best **'mini jet'** to use for the upcoming experiment. You then predicted how your plane would perform by creating a **'claim'**, supported that **'claim'** with **'evidence'**, and provided **'reasoning'** as to why the provided **'evidence'** supported the **'claim'**.

在 "迷你喷气机实验预报告" 中，你已经对 "喷气机" 进行了几次 "定量" 和 "定性观察"，你的小组使用这些 "观察" 来选择最佳的 "迷你喷气式飞机" 用于实验。然后，通过创建 "声明" 来预测飞机的性能，用 "证据" 支持该 "声明"，并就所提供的 "论证" 为何支持 "声明" 提供 "证据"。

- **Quantitative Observations/Data | 定量观察/数据**
  The collection of objective data involving numbers and measurement. For example, when your group tested your **'mini jets'** you were conducting '**quantitative observations**'. This is because you determine which one flew the furthest. Since distance is a numerical measurement, it's an example of a '**quantitative observation**'.
  收集涉及数字和测量的客观数据。例如，当你们在测试 "迷你喷气机" 时，正在进行 "定量观察"，因为你们已经决定了哪个飞得最远。由于距离是一个数值，那么初始试飞就是 "定量观察" 的例子。

- **Qualitative Observations/Data | 定性观察/数据**
  This is the oldest and most fundamental research methodology. In this approach, researchers collect data using their five senses (sight, hearing, smell, taste, touch) in a systematic and meaningful way. While you were unlikely to taste or smell your plane, you were likely to touch it to see if it had smooth edges or might have observed how it flew during your initial test flights. These observations would have helped you and your group select the best **'mini jet'** for your experiment.
  这是最古老、最基本的研究方法。在这种方法中，研究人员使用他们的感官以系统和有意义的方式收集数据。五种基本感官包括视觉、听觉、嗅觉、味觉和触觉用于收集 "定性观察"。虽然你不太可能尝到或闻到飞机的味道，但你很可能会触摸它，看看它是否有光滑的边缘，或者在最初的试飞中观察它是如何飞行的。这些观察结果将被用来帮助你和小组成员为你们的实验选择最佳的 "迷你喷气机"。

Forming A Hypothesis 形成假设

The next step in rewrite your **'Claim'**, **'Evidence'**, and **'Reasoning'** statement in a clear and logical way to form what is known as proper **'hypothesis'**. Your 'hypothesis' will follow the structure of "we believe that _____ will happen BECAUSE _____".

下一步，以清晰、逻辑的方式重写 "声明"、"证据" 和 "论证" 陈述，以形成正确的假设。你的假设将遵循 "我们相信_____会发生，因为_____" 的结构。